

IN THE CLAIMS:

- 1 1. (CURRENTLY AMENDED) A distributed software architecture system configured to
2 implement a routing protocol in a router of a computer network, the system comprising:
3 a plurality of processors;
4 a switch fabric interconnecting the processors; and
5 a plurality of processes each running on a different one of the processors, the
6 processes including two or more speakers and a protocol routing information base (RIB),
7 | each speaker ~~configured to operate independently to~~ (i) handle one or more connections
8 to peer routers of the router, (ii) receive and store routes from those peer routers, (iii) ap-
9 ply inbound policy to the routes received from the peer routers and (iv) download all
10 routes received from the peer routers, except those filtered by the inbound policy, to the
11 | protocol RIB, the protocol RIB ~~configured to perform a first stage of route selection to~~
12 compute a set of best routes from among the routes downloaded from all of the speakers
13 of the router.
- 1 2. (ORIGINAL) The system of Claim 1 further comprising a local RIB (loc-RIB) main-
2 tained by the protocol RIB and configured to store the set of best routes computed by the
3 protocol RIB.
- 1 3. (ORIGINAL) The system of Claim 2 wherein the processes further include a global
2 RIB configured to maintain a routing table for the router.
- 1 4. (ORIGINAL) The system of Claim 3 wherein the protocol RIB is configured to
2 download the set of best routes from the loc-RIB to the global RIB, the global RIB fur-
3 ther configured to use the downloaded set of best routes from the loc-RIB, along with

4 other sets of best routes downloaded from other routing protocols, to perform a second
5 stage of route selection that computes optimal routes for installation in the routing table.

1 5. (ORIGINAL) The system of Claim 4 further comprising one or more line cards con-
2 nected to the switch fabric, each line card configured to render forwarding decisions on
3 packets received at the router using a forwarding information base (FIB) constructed
4 from the optimal routes installed in the routing table.

1 6. (PREVIOUSLY PRESENTED) The system of Claim 2 wherein the protocol RIB is
2 further configured to upload the set of best routes to the speakers to allow the speakers to
3 advertise the best routes to the peer routers.

1 7. (ORIGINAL) The system of Claim 6 wherein each speaker is further configured to ap-
2 ply outbound policy to the best routes prior to advertising them to the peer routers.

1 8. (ORIGINAL) The system of Claim 7 wherein each speaker is further configured to ad-
2 vertise the best routes using update messages.

1 9. (ORIGINAL) The system of Claim 8 wherein the routing protocol is a Border Gateway
2 Protocol (BGP) and wherein the protocol RIB is a BGP RIB (bRIB).

1 10. (ORIGINAL) The system of Claim 1 wherein the routing protocol is a distance vector
2 routing protocol.

1 11. (ORIGINAL) A method for implementing a routing protocol in a router of a com-
2 puter network as a distributed software architecture system, the method comprising the
3 steps of:

4 providing a plurality of processors of the router;

5 interconnecting the processors;

6 running at least two speakers on at least two first processors of the plurality of
7 processors, each speaker:

8 handling one or more connections to peers of the router,

9 receiving and storing routes from those peers,

10 applying inbound policy to the routes received from the peers, and

11 running a protocol routing information base (RIB) on a second processor of the
12 plurality of processors, each speaker downloading all routes received from the peers, ex-
13 cept those filtered by the inbound policy, to the protocol RIB, the protocol RIB perform-
14 ing a first stage of route selection to compute best routes from among the routes down-
15 loaded from all of the speakers of the router.

1 12. (ORIGINAL) The method of Claim 11 further comprising the steps of:

2 maintaining a local RIB (loc-RIB) at the protocol RIB; and

3 storing the best routes computed by the protocol RIB in the loc-RIB.

1 13. (ORIGINAL) The method of Claim 12 further comprising the step of running a
2 global RIB on a third processor of the plurality of processors, the global RIB maintaining
3 a routing table for the router.

1 14. (ORIGINAL) The method of Claim 13 wherein the second and third processors are
2 the same processor.

1 15. (ORIGINAL) The method of Claim 13 further comprising the steps of:
2 downloading the best routes from the loc-RIB to the global RIB;
3 performing a second stage of route selection at the global RIB using the down-
4 loaded best routes from the loc-RIB, along with other sets of best routes downloaded
5 from other routing protocols, the second stage of route selection computing optimal
6 routes for installation in the routing table.

1 16. (ORIGINAL) The method of Claim 15 further comprising the steps of:
2 interconnecting one or more line cards to the plurality of processors;
3 constructing a forwarding information base (FIB) at each line card, the FIB con-
4 structed from the optimal routes installed in the routing table; and
5 rendering forwarding decisions on packets received at each line card using the
6 FIB.

1 17. (PREVIOUSLY PRESENTED) The method of Claim 12 further comprising the steps
2 of:
3 uploading the best routes from the protocol RIB to each speaker;
4 applying outbound policy to the uploaded best routes; and
5 advertising resulting best routes to the peers.

1 18. (ORIGINAL) Apparatus adapted to implement a Border Gateway Protocol (BGP)
2 routing protocol in a router of a computer network as a distributed software architecture
3 system, the apparatus comprising:

4 means for running a BGP speaker on a first processor of a plurality of intercon-
5 nected processors, the BGP speaker including:

6 means for handling one or more connections to peers of the router,

7 means for receiving and storing routes from those peers,

8 means for applying inbound policy to the routes received from the peers,

9 and

10 means for running a BGP routing information base (bRIB) on a second processor
11 of the plurality of interconnected processors, the BGP speaker further including means
12 for downloading all routes received from the peers, except those filtered by the inbound
13 policy, to the bRIB, the bRIB including means for performing a first stage of route selec-
14 tion to compute best routes from among the routes downloaded from the BGP speaker.

1 19. (ORIGINAL) The apparatus of Claim 18 further comprising:

2 means for maintaining a local RIB (loc-RIB) at the bRIB; and

3 means for storing the best routes computed by the bRIB in the loc-RIB.

1 20. (ORIGINAL) A computer readable medium containing executable program instruc-
2 tions for implementing a routing protocol in a router of a computer network as a distrib-
3 uted software architecture system, the executable program instructions comprising pro-
4 gram instructions for:

5 running at least two speakers on at least two first processors of a plurality of in-
6 terconnected processors, each speaker:

7 handling one or more connections to peers of the router,

8 receiving and storing routes from those peers,
9 applying inbound policy to the routes received from the peers, and
10 running a protocol routing information base (RIB) on a second processor of the
11 plurality of interconnected processors, each speaker downloading all routes received from
12 the peers, except those filtered by the inbound policy, to the protocol RIB, the protocol
13 RIB performing a first stage of route selection to compute best routes from among the
14 routes downloaded from all of the speakers of the router.

1 21. (ORIGINAL) The computer readable medium of Claim 20 further comprising pro-
2 gram instructions for:

3 maintaining a local RIB (loc-RIB) at the protocol RIB; and
4 storing the best routes computed by the protocol RIB in the loc-RIB.

1 22. (NEW) A method comprising;

2 running a first speaker on a first processor of a router, the first speaker i) handling
3 a first set of one or more connections to one or more selected peer routers (ii) receiving
4 and storing routes from those peer routers, (iii) applying inbound policy to the routes re-
5 ceived from those peer routers and (iv) downloading routes received from those peer
6 routers, except ones filtered by the inbound policy, to a protocol RIB;

7 running a second speaker on a second different processor of the router, the second
8 speaker running independently of the first speaker, the second speaker i) handling a sec-
9 ond set of one or more connections to one or more different selected peer routers (ii) re-
10 ceiving and storing routes from those peer routers, (iii) applying inbound policy to the
11 routes received from those peer routers and (iv) downloading routes received from those
12 peer routers, except ones filtered by the inbound policy, to the protocol RIB;

13 running a protocol RIB on a third different processor of the router, the protocol
14 RIB performing a first stage of route selection to compute a set of best routes from
15 among the routes downloaded from speakers; and

16 presenting, by the first speaker, second speaker and protocol RIB, an appearance
17 of a single routing protocol process to devices external from the router..

1 23. (NEW) The method of Claim 22 wherein the first speaker and the second speaker
2 are Border Gateway Protocol (BGP) speakers and wherein the protocol RIB is a BGP
3 RIB (bRIB).

1 24. (NEW) The method of Claim 22 further comprising:

2 maintaining a local RIB (loc-RIB) at the protocol RIB; and

3 storing the best routes computed by the protocol RIB in the loc-RIB.

1 25. (NEW) The method of Claim 22 further comprising:

2 running a global RIB on a fourth processor, the global RIB maintaining a routing
3 table for the router.

1 26. (NEW) The method of Claim 22 further comprising:

2 downloading the best routes from a loc-RIB to a global RIB; and

3 performing a second stage of route selection at the global RIB using the down-
4 loaded best routes from the loc-RIB, along with other sets of best routes downloaded
5 from other routing protocols, the second stage of route selection computing optimal
6 routes for installation in the routing table.

- 1 27. (NEW) The method of Claim 22 further comprising:
- 2 interconnecting one or more line cards to the first processor and second processor;
- 3 constructing a forwarding information base (FIB) at each line card; and
- 4 rendering forwarding decisions on packets received at each line card using the
- 5 FIB.